

Claims

- [c1] 1. A fabrication method for a semiconductor hole, the method is applicable in forming a plurality of holes in a photoresist layer, comprising:
performing a first exposure process on the photoresist layer using a first photomask, wherein the first photomask comprises a plurality of first polygon patterns thereon, and each of the first polygon pattern is rotated a first fixed angle from a first arrayed position;
performing a second exposure process on the photoresist layer using a second photomask, wherein the second photomask comprises a plurality of second polygon patterns thereon, each second polygon pattern is rotated a second fixed angle from a second arrayed position and is mirror imaged to the first polygon patterns; and
performing a development process on the photoresist layer to form the holes.
- [c2] 2. The method of claim 1, wherein the first fixed angle and the second fixed angle are about 45 degrees.
- [c3] 3. The method of claim 1, wherein the first and the second polygon patterns are applicable to a photomask used for exposing a positive photoresist.
- [c4] 4. The method of claim 1, wherein after forming the hole, an ion implantation process is performed.
- [c5] 5. The method of claim 4, wherein after the ion implantation process, the photoresist layer is removed.
- [c6] 6. The method of claim 1, wherein after forming the holes, an etching process is performed.
- [c7] 7. The method of claim 6, wherein after the etching process, the method further comprises removing the photoresist layer.
- [c8] 8. An ion implantation process, comprising:
forming a dielectric layer on a substrate;
forming a photoresist layer on the dielectric layer;
performing a first exposure using a first photomask that comprises a plurality

of diagonally allocated first polygon patterns, wherein the first polygon patterns are rotated a first fixed angle from a first arrayed position;
performing a second exposure using a first photomask that comprises a plurality of diagonally allocated second polygon patterns, wherein the second polygon patterns are rotated a second fixed angle from a second arrayed position and are mirror imaged to the first square patterns;
performing a development process on the photoresist layer to forming a plurality of holes, wherein a portion of the dielectric layer is exposed; and
performing an ion implantation process.

- [c9] 9. The method of claim 8, wherein the fixed angle and the second fixed angle are about 45 degrees.
- [c10] 10. The method of claim 8, wherein the first and the second polygon patterns are applicable to a photomask used for exposing a positive photoresist.
- [c11] 11. The method of claim 8, wherein subsequent to the ion implantation process, the photoresist layer is removed.
- [c12] 12. The method of claim 8, wherein after forming the dielectric layer on the substrate, the method further comprises planarizing the dielectric layer.
- [c13] 13. A method for forming a contact window, comprising:
forming a dielectric layer on a substrate;
forming a photoresist layer on the dielectric layer;
performing a first exposure using a first photomask that comprises a plurality of diagonally allocated first polygon patterns, wherein the first polygon patterns are rotated a first fixed angle from a first arrayed position;
performing a second exposure using a second photomask that comprises a plurality of diagonally allocated second polygon patterns, wherein the polygon square patterns are rotated a second fixed angle from a second arranged position and are mirror imaged to the first square patterns;
performing a development process on the photoresist layer to form a plurality of contact holes, wherein a portion of the dielectric layer is exposed; and
performing an etching process on the dielectric layer to form a plurality of

contact windows using the photoresist layer that comprises the plurality of the contact windows as a mask.

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| [c14] | 14. The method of claim 13, wherein the first fixed angle and the second fixed angle are about 45 degrees. |
| [c15] | 15. The method of claim 14, wherein the polygon patterns are applicable to a photomask used for exposing a positive pattern. |
| [c16] | 16. The method of claim 13, wherein after etching the dielectric layer, the photoresist layer is removed. |
| [c17] | 17. The method of claim 13, wherein after forming the dielectric layer on the substrate, the method further comprises planarizing the dielectric layer. |
| [c18] | 18. A method for fabricating a semiconductor hole, which is applicable to forming a plurality of holes in a photoresist layer, comprising: applying a first photomask to perform a first exposure on the photoresist layer, wherein a pattern of the first photomask is a plurality of first square patterns, and each of the first square patterns rotates a first fixed angle from a first arrayed position; applying a second photomask to perform a second exposure on the photoresist layer, wherein second photomask comprises a plurality of diagonally allocated square patterns, wherein each of the second square patterns rotates a second fixed angle from a second arrayed position and is mirror imaged to the first square patterns; and performing a development process on the photoresist layer to form the holes. |
| [c19] | 19. The method of claim 18, wherein the first fixed angle and the second fixed angle are about 45 degrees. |
| [c20] | 20. The method of claim 18, wherein the square patterns are applicable to a photomask used for exposing a positive photoresist. |
| [c21] | 21. The method of claim 18, wherein subsequent to forming the holes, an ion implantation is performed. |

- [c22] 22. The method of claim 21, wherein subsequent to the ion implantation, the photoresist layer is removed.
- [c23] 23. The method of claim 18, wherein subsequent to forming the holes, an etching process is performed.
- [c24] 24. The method of claim 23, wherein subsequent to the etching process, the photoresist layer is removed.